Urban political ecologies of housing and climate change: the 'Coolest Block' Contest in Philadelphia

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Abstract

Urban authorities and a range of private and civil society actors have come to view housing as a key arena in which to address climate change whilst also pursuing wider social, economic and environmental objectives. Housing has been a critical area for urban studies, but often considered in sectoral terms and work on urban responses to climate change has followed this positioning. By contrast, an Urban Political Ecology (UPE) perspective would position housing in more integrated terms as part of the metabolism of the city. Yet so far there has been relatively little written in UPE about either housing or climate change. This paper therefore seeks to bring UPE into dialogue with the emergent literature focussed on governing climate change through housing. It does so through a detailed study of the 'Retrofit Philly "Coolest Block" Contest'. We argue that this contest highlights the ways climate change is changing the way housing is embedded in the circulations of the city, pointing to changes in who is governing housing, how housing is being governed, and who is able to access the benefits of (climate change-branded) action on housing.

Keywords

Climate change, urban political ecology, Philadelphia, Housing, Governance

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Introduction

Urban authorities and a range of private and civil society actors have come to view housing as a key arena in which they can address climate change whilst also pursuing wider social, economic and environmental interests in the city (Lovell, 2004). Providing 'climate resilient' housing is regarded as a means through which financial savings, green jobs, health benefits, and improved urban habitats can be created. Housing has also been a critical area for urban studies, but often considered either as a planning issue, a matter of economic investment, or as a site of private consumption. Work on urban responses to climate change has followed this broader positioning of housing in the city and has attended to questions of sprawl/densification as a planning issue, and to issues of energy consumption in housing as a matter of behavioural choice or the implementation of largely technical interventions, considering issues of investment, the organisation of policy and so forth. This tends to isolate housing as a particular sector of the urban arena, but an alternative perspective, derived from the work of Urban Political Ecology (UPE), understands the city in much more integrated terms. We think there is much to be gained from applying key analytical devices which UPE has developed to both the governance of climate change in the city, and to housing as an infrastructure, despite the fact that the traditional focus within UPE has been on 'big infrastructures' such as water, waste and—increasingly—energy networks, and 'big ecologies' such as urban forests (Braun, 2005; Heynen, 2014). Heynen *et al.* (2006) identify metabolism and circulation as two central tropes of UPE, and in this paper we mobilise the notion of circulation as an analytical lens through which to explore how climate change is facilitating new interventions in housing in Philadelphia and to consider their implications for urban politics. In doing so, the paper builds on recent contributions in this journal which have focussed on the nexus between urban governance and climate change (Whitehead, 2013; Rutherford, 2014; McGuirk *et al.*, 2014), as well as applying the analytical tools of UPE towards a new socio-ecological challenge in the city: climate changed housing as an infrastructure.

We develop our argument with reference to the 'Retrofit Philly "Coolest Block" Contest': a contest run in 2010-11 which gave Philadelphians the opportunity to win a suite of energy efficiency retrofits, headlined by a new 'cool roof' coating. Through our analysis of the 'Coolest Block Contest', we show that the form and quality of housing is increasingly being problematized through a climate change lens, and the solutions sought in the social relations which transform houses into homes: communities, neighbourhoods, and the like. By creating an alignment between socio-political and ecological imperatives to improve housing (particularly through the notion of 'retrofitting'), climate change is transforming the place of housing in the circulations of the city by changing who is governing housing, the manner in which this governance is effected, and who is constructed as a legitimate beneficiary of this action. Examining these processes is the task of UPE (Heynen *et al.*, 2006).

Urban political ecologies of housing and climate change

The transformation of cities and urban environments according to the interests of capital has been a central theme of UPE research (Gandy, 1997, 2008; Kaika & Swyngedouw, 2000; Kaika, 2005; Heynen *et al.*, 2006), and theorists have been particularly concerned with the socio-environmental drivers of the highly differentiated urban experience, driven by an understanding that "the material conditions that comprise urban environments are controlled and manipulated and serve the interests of the elite at the expense of marginalised populations" (Swyngedouw & Heynen, 2003, p. 902). Housing, though, has not figured prominently within UPE (Cidell, 2009), which has tended to focus its attention on other parts of the infrastructural lattice of the city, in particular the large infrastructural networks of piped water provision and green spaces such as parks and urban forests (Braun, 2005; e.g. Graham & Marvin, 1994; Swyngedouw, 1997; Haughton, 1998; Bakker, 1999; Monstadt, 2009; for an exception focussing on waterfront redevelopment, see Hagerman, 2007). This is consistent with Biehler and Simon's (2011) observation that the 'indoor' remains a space largely un-theorized in UPE, the analysis of which generally stops at the water meter, the electricity meter, or the boundaries of the public park.

There is a critical need for a robust UPE of housing, which is both a pivot around which many of the infrastructures of the city connect and a space of 'ecological' intervention, particularly in the context of climate change, as it is an infrastructure which influences both the production and consumption of carbon. In developed countries housing has been a long-standing concern of climate change policy, and Lovell (2004) has shown that 'low carbon housing' and 'sustainable housing' have emerged as discursive signifiers which permit action on housing by different actors within society. Despite this, housing has received comparatively little attention as an infrastructure, notwithstanding the fact that it is increasingly being enrolled into what While *et al.* (2010) call the new 'low carbon polity', in which the state takes increasingly instrumental approaches to controlling carbon through both technical and social interventions.

The new, ecologically-aware state has been expanding its interest in housing, recognising it as a critical space in which to act on climate change. But it has found housing to be rather impenetrable and obdurate, sustaining and re-producing through its material form and the everyday practices it instils all kinds of undesirable environmental and social outcomes (Hommels, 2005). This is paradoxical because this obduracy can be directly explained by the historical success of the state in constructing housing as a 'private' sphere (both literally and figuratively). A particular concern has been the way housing acts as a structural impediment to reducing resource use, particularly of water and energy (e.g. Lovell & Smith, 2010). So climate change has become attached to the pre-existing energy efficiency agenda and mobilized as a reason for 'retrofitting', an intervention which is just as social as it is material, since it demands changes in behaviour and consumption practices just as much as in the material fabric of houses. Here, capital has discovered a new resource to exploit, since the individualized model of voluntary action fits well within the paradigm of economic self-

sufficiency but is perhaps less receptive to the meanings that residents themselves attach to their housing (Smith, S. J., 2008; Powells, 2009).

The idea of circulation is one of two central tropes of UPE[1]. It is concerned with how the city is constituted by *movement*, both of commodities such as water and waste, but also of money, which together describe the totality of a capitalist economy (Swyngedouw, 2006). For Harvey as for Smith, these flows of capital are both descriptive of the city and constitutive of the inequality which is entrenched in its infrastructural lattice (Harvey, 1973; Smith, N., 1990, 1996). It is our contention in this paper that climate change reconfigures the circulations of the city in ways that allow both the state and capital to reach further into the home. It does so by transforming who is governing housing, how housing is being governed, and whose housing stands to benefit. We pose this argument using the example of Philadelphia's 'Coolest Block Contest', which we studied as part of a larger project investigating the emergence of new forms of climate change governance in cities (*authors reference*). Our primary data source for this paper is a series of 36 qualitative semi-structured interviews with key informants drawn from state and city government agencies, civil society, and the business community, which were conducted in Philadelphia in October 2011. Interviews were recorded and transcribed.

Reimagining the city, retrofitting housing: the new green deal in Philadelphia

Arriving in Philadelphia, one is immediately struck by a strikingly different urban form to that typical of most American cities. Rows of terraces ranging from one to four storeys in height dominate the city, as a material reminder of the city's long industrial boom which ran from the late 17th century right up until the 1950s (City of Philadelphia, 2011). But the variable condition of these 'Philadelphia Rowhouses'—as they have come to be known—also serves as a visceral reminder that racially differentiated poverty has characterized the city ever since upwardly mobile white residents began moving to the suburbs in the early 20th century (Bauman, 1987; Fairbanks, 2011; City of Philadelphia, 2011). Successive waves of gentrification and ghettoization are visible as pockets of renovation and decay in this city of neighbourhoods, processes explored in some detail by both Smith (1996) and Adams *et al.* (2008).

So it is fitting, in a city whose housing stock is so iconic and yet so neglected, that housing has found itself at the very centre of Philadelphia's attempts to position itself as a leader in urban sustainability, leveraging the opportunities afforded by climate change to re-imagine the city as a centre of low-carbon prosperity rather than post-industrial decay (see Table 1). As the City's 2009 *Greenworks Philadelphia* sustainability plan puts it, "For the first time in decades, changes beyond our borders—primarily rising energy prices, but also climate change and an emerging green economy—are increasing the value of our urban assets. Philadelphia's

[1] For a detailed discussion of both circulation and metabolism, see Swyngedouw (2006).

dense and durable stock of housing, infrastructure and amenities position us to prosper in a carbon-constrained future" (City of Philadelphia, 2009, p. 2).

Discursively, this has required positioning housing as simultaneously the problem and the solution to urban sustainability in Philadelphia. At the same time as the "regional network of dense local neighborhoods" has been presented as "the perfect urban form for the future" (City of Philadelphia, 2009, p. 3), a host of problems associated with Philadelphia's housing have been codified in environmental terms. Primary among them is the energy inefficiency of most Rowhouses. Built with cost rather than comfort in mind, they often have minimal or no insulation and are poorly sealed against draughts (Schade *et al.*, 2008). As a result, they can be uncomfortably cold in winter even as in summer they become uncomfortably hot, a fact exacerbated by the fact that their flat or almost-flat roofs are generally coated with black asphalt which absorbs solar energy and transmits it as heat into the rooms below. As one interviewee explained, "the housing stock that we have is a basic brick box with a black flat roof, a tar roof and this housing stock is built to hold the heat so it's very good for cold climates, it's not very good for hot climates" (Interviewee, ECA). This inefficiency is compounded by urban poverty, because while many City residents own their homes they lack the financial capacity to adequately maintain them and their houses are often literally decaying around them.

Table 1: Genealogy of urban climate change action in Philadelphia

Year	Goal / Plan	Source
1999	Reduce GHG emissions to 10% below 1990 levels by 2010 as part of Cities for Climate Protection (ICLEI)	(City of Philadelphia, 2007, p. i)
2005	Meet Kyoto Protocol GHG emissions targets set for the USA (7% below 1990 levels) as part of US Mayors' Climate Protection Agreement of the US Conference of Mayors	(City of Philadelphia, 2007, p. i)
2006	Joined Large Cities Climate Leadership Group and Clinton Climate Initiative (CCI)	(City of Philadelphia, 2007, p. i)
2007	*Local Action Plan for Climate Change*	(City of Philadelphia, 2007)
2007	Michael Nutter elected Mayor on a sustainability platform, creates the Mayor's Office of Sustainability in early 2008	(Interviewee, MOS)
2008	Mayor Nutter creates the Mayor's Office of Sustainability	
2009	*Greenworks Philadelphia*	(City of Philadelphia, 2009)
2010	EnergyWorks	

In fact, the renovation of Philadelphia's housing stock and provision of adequate housing for low-income people were already significant challenges for the city governors long before 'low carbon' became *de rigueur* (Bauman *et al.*, 1991). But where earlier efforts at economic restructuring—such as those outlined by Bauman *et al.* and Smith (1996)—relied on the demolition of housing, climate change has underpinned a new approach to restructuring which necessitates renewal and improvement of existing housing. It has emerged as a means for reconstructing (and literally rebuilding) the city. In doing so, the retrofitting agenda facilitated

a threshold crossing in which the state and capital extended their reach into the home in the name of both individual and collective benefits.

Despite a broader lack of societal conviction about climate change in the USA, in Philadelphia it has served as frame which underpins the new green deal through which both the state and capital have sought to transform housing both materially and symbolically. The vision of a prosperous future for Philadelphia depends on climate change to deliver the competitive advantage latent in its dense urban form. Furthermore, given that the Rowhouse is intrinsic to this urban form, retrofitting this housing to maximize its energy efficiency and thermal comfort has become a core interest of both the state (which has the low-carbon vision) and capital (which stands to benefit from the transition). Climate change is reshaping the circulations at the heart of Philadelphia's urban metabolism. Public-private partnerships have been central to delivering this new green deal, driven by both philosophical conviction and pragmatic considerations occasioned by severe budgetary austerity enforced on the City administration by decades of declining population exacerbated by the shock of the 2008 Global Financial Crisis. In this manner, climate change is facilitating an extension of the influence of state and capital from housing across the threshold into the home, a move which is particularly evident in the 'Retrofit Philly "Coolest Block" Contest', to which we now turn.

Extending the reach of state and capital: the 'Retrofit Philly "Coolest Block" Contest' and the urban governance of climate change

The 'Retrofit Philly "Coolest Block" Contest' was a competition run in 2010 which gave one city block the opportunity to win a cool roof, air sealing and insulation upgrades by residents joining together and submitting a joint entry involving a register of homeowners willing to participate along with an essay on why their block was Philadelphia's 'coolest block'. The competition was sponsored by the Energy Coordinating Agency (ECA), Dow Chemical Company's Building and Construction Division (Dow) and the City of Philadelphia (particularly the Mayor's Office of Sustainability – MOS). The Dow Foundation funded the project in the order of US$500,000 (Interviewee, MOS), Dow provided technical support for it, the ECA ran the contest, and the MOS administered it. Seventy-four blocks entered the competition, and the upgrades were installed on the winning block during 2010-11. It featured in the 2010 *Greenworks* progress report as one of two measures carried out towards the City's target of retrofitting 15% of Philadelphia's housing stock with insulation, air sealing and cool roofs by 2015 (City of Philadelphia, 2010). In this section we highlight how climate change has changed the way housing is embedded in the circulations of the city, focussing on three key issues. Firstly, the matter of who is governing housing, focussing on the partnership between state and capital. Secondly, how housing is being governed, focussing on the mobilization of community and the subjectification of the citizen. Thirdly, who is able to access the benefits of such climate change-branded action on housing.

Who is governing housing? Forming a partnership between state and capital

The Coolest Block Contest can be considered emblematic of a shift in urban governance away from the direct involvement of the state and towards partnership arrangements where capital plays an increasingly pivotal role (Bassett, 1996; Brenner & Theodore, 2002; Jessop, 2002). The genesis of the Coolest Block Contest lay in the confluence of the interests of capital and the state, mediated through personal contacts facilitated by the Mayor's Sustainability Advisory Board. In 2008, the prominent Philadelphia chemical company Rohm and Haas was acquired by Dow, and Dow was seeking "a project that would really marry together the Rohm and Haas technologies and the Dow technologies … so Rohm and Haas is involved with this acrylic, solar reflective acrylic coating and Dow has Dow Building Solutions and so why not show how all this fits together" (Interviewee, Dow). At the same time, the interviewee from Dow was a member of the Mayor's Sustainability Advisory Board, which was trying to generate ideas for ways to push forward the City's *Greenworks* plan. In this context, the interviewee from Dow approached the interviewee from the ECA (who had worked together before) for ideas and as the interviewee from the ECA put it, "I said well why don't we do a Coolest Block Contest because we had done one of these before and it was a huge success" (Interviewee, ECA). At this point, the role of the state is that of facilitator. Indeed, a representative of the MOS acknowledged that because of budgetary constraints, *Greenworks* acts more as a container and aggregator of existing actions rather than stimulating new projects or actions (Interviewee, MOS).

While the City provided the space for Dow and the ECA to come together to effect change on housing, it was the personal connections between key individuals at Dow and the ECA which provided the landscape of trust which once the project commenced held together actors with a common interest but divergent core agendas. For Dow, the competition provided a means through which to (internally) demonstrate its commitment to its new Philadelphia-based division and (externally) showcase its products and the energy savings they could deliver. It was an opportunity for Dow to show "how their products can actually help save energy and be environmentally beneficial when their legacy is sort of about horrible environment degradation" (Interviewee, MOS). The contest supported the ECA's core agenda to create public awareness of its energy efficiency and weatherization services and the benefits they could deliver. For the City of Philadelphia, the contest was an opportunity to take a concrete action towards the *Greenworks* plan with little financial outlay, and it developed into an opportunity through which to publicise the cool roofing legislation which was being introduced at the time.

Each of the sponsors was dependent on the others to achieve their individual aims. Dow understood that it depended on the ECA's reputation in the community for the Coolest Block Contest to have credibility as a demonstration project. As the Interviewee from Dow explained, "if Dow does the measurements and Dow says they saved all this energy it's just not terribly believable … so have [Interviewee, ECA] do that, [Interviewee, ECA] is well respected, she's been doing this, ECA is about twenty-five years old now." At the same time, the ECA understood its dependence on Dow because though it had run a similar contest

successfully before it "didn't have the publicity that this one had because we didn't have a corporate sponsor" (Interviewee, ECA), both for funding but also to bring a corporate mindset to the project, including engaging a "really first class PR firm" (Interviewee, ECA). Finally, for the City, budgetary austerity meant that externally-funded interventions were absolutely essential for it to be able to make meaningful progress towards its *Greenworks* targets. So not only did the Coolest Block Contest have the effect of enrolling a large company with a strong local presence in the *Greenworks* process, it did so with very little capital outlay from the City.

Looking beyond the story of successful partnership told by the contest sponsors, it is clear that the Coolest Block Contest is an example of capital extending its reach both literally and figuratively into the home, at the behest of civil society and the state. When the tradesmen arrived at the winning block—1200 Wolf Street in South Philadelphia—to begin installing the upgrades, they were contracted by the ECA, paid by Dow, and constructing the City's vision of a sustainable future. But it was Dow who took the lead in both seeking out the project and then carrying it through to fulfilment. The Dow representative explained, "you can't wait around for the government all the time right, you've got to set a good example, that's what I think leadership is, leading by example" (Interviewee, Dow).

Of course, when capital begins to govern, its networks become more important, and scale becomes an important consideration. So at the same time as Dow was sponsoring the Coolest Block Contest directly from the Dow Foundation, a respondent from Habitat for Humanity Philadelphia reflected that the multi-national character of Habitat as an NGO allows it to engage with companies such as Dow to negotiate in-kind or product donations to assist with their social housing agenda: "they give us house wraps and they give us the Great Stuff [Dow trademarked foam sealant] and they give us sill seal you know the tapes to help close the airflow down so that's very, very helpful I think and then we save about ten dollars a square foot through our Gifts in Kind programme" (Interviewee, Habitat for Humanity Philadelphia). Indeed, without the engagement of capital, it is questionable how much could actually be achieved in an age in which government has pulled back from direct interventions in the fabric of the city at the same time as climate change necessitates greater urgency of action than that which 'traditional' public approaches to intervening in housing (such as building code changes, planning regulations and education campaigns) can deliver.

The Coolest Block Contest points to the way that climate change makes the home accessible for intervention by a variety of actors, as has been noted in the context of eco-homes in Europe by Noortje Marres (2008). Housing becomes repositioned on the agenda of both state and capital as an infrastructure through which a variety of actors seek to exert their influence for various social and environmental ends. As responsibility for addressing climate change is shifting from governments and nation-states to cities and the individuals within them, private sector organisations (capital) are increasingly becoming the key actors in regulating urban housing. Critically, the involvement of capital is not entirely altruistic but nor is it pernicious. Rather, climate change is drawing housing deeper into the metabolic flows of the city (Kaika,

2005), and increasingly into new circuits of accumulation which are being created in the name of climate change mitigation or adaptation.

How is housing being governed? Mobilizing community and subjectifying the citizen

To do this requires overcoming the obduracy of housing which its 'private' nature sustains. The Coolest Block Contest highlights two techniques by which these state-capital partnerships are seeking to govern housing in the context of climate change action. The first is by actively seeking to mobilize notions of 'community' to provide entry points for intervention. The second is by leveraging the influence of particular community members, building on a broader individualization of responsibility for climate change (Paterson & Stripple, 2010). These techniques wield power indirectly (rather than directly, as is the case with traditional regulation or redevelopment-based interventions) to reconstruct the home and regulate the behaviour of the people within it, generating a new circulation of capital focussed on retrofitting. They are vital to both the financial and environmental success of the interventions being promoted (see Lockwood & Davidson, 2010).

It was no accident that participants for the Coolest Block Contest were recruited by a MOS mailout of a glossy information pack (supplied by Dow) to the Mayor's network of 'Block Captains', described by one of the organizers as "people who are either self-appointed or you know somehow elected or selected by their neighbours as the leader of the block ... the mayor has cultivated that group of people very wisely and he maintains a very good relationship with block captains" (Interviewee, ECA). The intent was to mobilize community spirit by stimulating inter-neighborhood competition. Neighbourhood rivalry would in this manner be harnessed to motivate homeowners to improve and retrofit their homes. Housing, in this sense, is governed through the community and the informal networks of social relations which constitute the neighbourhoods of the city, rather than formal documents such as planning law and building codes. This stands in contrast to earlier approaches to govern housing through formal planning restrictions and regulations such as the building code. One respondent thought this approach was particularly suited to Philadelphia because of its dense urban form and historically strong neighbourhood connections (Interviewee 2, ECA). It engenders both a different role for the state—as advocate and educated friend rather than bearer of the sword—and a different approach to regulation through persuasion rather than pronouncement. Perhaps this was why the MOS self-consciously positioned social marketing as its core business, viewing itself as the "sustainability brains trust" of the City and stressing that "the backend of our plan [*Greenworks*] is all about engagement" (Interviewee, MOS). Indeed, the MOS finds its role as not dissimilar from that of the salesperson: "in any given week we are probably out, one or two of us is out presenting a couple of times to a group on *Greenworks* or some specific element of *Greenworks* that they're interested in to try to make the plan real" (Interviewee, MOS).

In the Coolest Block Contest, the *modus operandi* was, quite naturally, competition. The initial mailout was followed up with three community information evenings to provide further

information on the contest and the materials which would be installed on the winning block. This provided an opportunity to demonstrate what products would be installed and answer questions, but, critically, also ignited competition between the blocks as "they saw each other and they were like oh this is a real contest you know that group over there you know I don't want them to win you know I gotta win" (Interviewee, ECA). But even if inter-neighbourhood rivalry drove those 74 blocks to participate in the Coolest Block Contest, and in so doing drew them into a new retrofitting-based circulation, it is an open question whether such rivalry is sufficient to drive more sustained, structural change in the absence of a clear, short-term gain. Marres (2008) has argued that publicity campaigns in the eco-homes sector have been able to assemble publics, but only temporarily, suggesting the use of publicity-based rivalry to generate wider change may prove more difficult than envisaged by the ECA, which is seeking to do so through its 'Select Partnerships Programme' under EnergyWorks:

> we as a programme will partner with a neighbourhood or civic association to get that neighbourhood's homes weatherized and then the next neighbourhood over can say 'well why haven't we done this yet you know they did it and their homes are more energy efficient' and you know that's been working well" (Interviewee, ECA).

The second technique for indirect governance highlighted by the Coolest Block Contest is that of leveraging the influence of particular community members to help mediate interventions within the home.

The ability of Dow, the ECA and the City to retrofit even the community-friendly and civically-engaged winning block—1200 Wolf Street—was critically dependent on the goodwill and professional expertise of the block captain, not to mention considerable effort on her part. The block captain was critical to the success of the whole project, not just as a promoter and point of contact, but also as a professional. During the competitive phase, the block captain had the task of garnering support and participation in the contest. The ECA representative explained that in 1200 Wolf Street the block captain "spoke to everyone and she tailored her pitch to them based on what she knew about them right whether because she's, she's what, an environmental scientist? … And her husband's an architect" (Interviewee, ECA). Though the block captain found that "there was relatively little resistance", she had to overcome "suspicion that ... you don't get anything free from the government" (Interviewee, Winning Block) and that there must be some hidden agenda behind the contest.

The block captain also played a vital role as both mediator between the ECA and residents, and advocate of the residents' interests. In one case, she even went as far as to read MSDS product safety specifications on the installation materials in an (ultimately unsuccessful) attempt to assuage concerns from one resident about health issues associated with the installation. "I don't think they expected two people to have construction management backgrounds to have won the contest" she reflected with a laugh, immediately hastening to explain that "I took it very seriously as my responsibility to be you know the advocate of the

people on the block as well as the go-between with ECA" (Interviewee, Winning Block). This involved delicate negotiation, such as around the fact that installing insulation in roof cavities generally required the installers to cut a hole in the roof to gain access, and residents had little knowledge of the white elastomeric coating being applied, raising questions about warranties, ongoing maintenance requirements, and documentation of the works.

This points to the critical role of citizens as subjects and intermediaries in facilitating the new interventions of state and capital in housing, or as Haughton *et al.* (2013, p. 231) would put it, in creating a 'soft space' in which "indirect techniques for self-management" become embedded into "everyday planning and regeneration practices". In the Coolest Block Contest, the block captain became a privileged subject, one whose particular combination of social and technical skills facilitated the subjectification of the other block residents as capable of governing their own housing in relation to climate change and energy problematics, whether or not that was what they desired (Paterson & Stripple, 2010; Marres, 2008). Through this process, the state and capital were able to extend their influence beyond the threshold of the residents' doorways and into the interstitial spaces of their homes. This process was both deliberate and serendipitous. The contest organisers explicitly hoped that such 'social norming' would help overcome the invisibility of energy efficiency by mobilizing local champions in a process not dissimilar to community-based social marketing, where a small number of 'enlightened citizens' are targeted and then set to work to "get the folks who don't have the confidence, who don't really know what to do, who are confused and are sitting on the fence they get them off the fence and these people follow along" (Interviewee, ECA). However, they were also beneficiaries of the particular social and technical skill-set of the 1200 Wolf Street's block captain, around whom the success of the intervention pivoted.

Whose housing benefits from the new governance paradigm?

The previous two sections have explored how the Coolest Block Contest points to the changed configuration of who is governing housing, and the mechanisms being used to do so. This section turns to what it shows about who the valid beneficiaries of climate change action are. It does so by examining three groups who might be considered valid beneficiaries of climate change action. We first examine interventions in the housing of the poorest, arguing that they are the beneficiaries of the welfare state. We then turn to those who are 'able to act'—the lower middle and middle classes broadly—arguing that it is this group's housing which the state and capital are seeking to renovate in response to climate change. But between these two groups lies a significant proportion of Philadelphia's population, the 'working poor', and we argue that this is the group which stands to lose the most (both in symbolic and material terms) as a result of the way the city is being reconfigured in the name of climate change.

The poorest

The poorest residents, generally living in public housing, are the recipients of welfare. In Philadelphia, weatherization of their homes has been carried out by public bodies like the

Philadelphia Housing Development Corporation (PHDC) or non-profits like the ECA. These programs face the same challenges as any other social security measures: layers of bureaucracy, long wait times, and problems with engaging with those most in need. A respondent from the Mayor's Office of Community Services explained that the PHDC's basic weatherization assistance package, for instance, had a waiting list three years long (Interviewee, MOCS). For this group in society, the primary need was not cool roofs or even insulation, but rather much more basic and mundane improvements to doors and windows ensure they close properly (Interviewee, MOCS). Here, climate change was largely irrelevant, and energy efficiency of secondary importance to just having access to services such as energy and water (Interviewee, MOCS). Organizations like the ECA and Habitat for Humanity were targeting this group through both government-grant funded direct weatherization assistance and private donations, but struggling to keep up with the demand. One such program was the ECA's weatherization workshops demonstrating low-cost ways to save energy such as taping cling wrap inside windows, filling holes in walls and reducing draughts around windows and doors – a series of interventions literally designed to fill the gap left by the long wait times for substantial renovation.

The 'able to act'

The Coolest Block Contest, by contrast, targets the housing of those who are able to act as the site for renovation. The fact sheet distributed about the Coolest Block Contest stated that the judging criteria would "include the condition and type of roof currently installed, the level of participation for your block, and the story of why your block should be chosen as the "Coolest Block" in Philly" (Contest fact sheet, 2010). While the contest had no income criterion, the winning block would have to have what the ECA respondent called a "treatable" roof, immediately excluding any blocks with roofs deemed in need of more than a superficial renovation.

For the ECA, white roofs solve two problems at once. Firstly, they provide a rationale for a badly-needed renewal of roofs in Philadelphia. In the future, the representative from the ECA explained, "we'll also give people a white roof every time [a home is weatherized] and we'll give them a new roof which for them is going to be a bonanza you know a really big deal, it's going to be a game changer" (Interviewee, ECA). Secondly, by acting as a form of 'external insulation', they would circumvent the challenges hazards such as old electrical wires posed to cost-effective energy-efficiency retrofits such as roof cavity insulation. The cool roofing and energy efficiency retrofits which the Coolest Block contest showcased were "a more affordable way to cool these buildings" for "low income people who are the ones who can least afford air conditioning" (Interviewee, ECA), critical to the ECAs vision for urban renewal in Philadelphia. However, despite the ECA's history in facilitating weatherization of 'low income' homes, the Coolest Block Contest did not target these people, and nor does the EnergyWorks program which most benefited from the publicity and lessons learned during the Coolest Block contest. Funded by $25 million from the *American Recovery and*

Reinvestment Act (ARRA)[2]—the economic stimulus package designed to contain the effects of the 2008 global financial crisis on the USA's economy—leveraged with an additional $25 million from private investment, EnergyWorks is:

> a revolving loan fund and the idea is that by putting the lending as well as all the expertise in one place it really breaks down a lot of the typical barriers for the residential customer. So a lot of times even if people could get a loan and were willing to take the loan out they didn't know how to find a contractor that they could trust, they didn't know how to take the loan and do the work and then none of the work got done correctly so this puts the planning, the financing and the quality assurance all under one roof. (Interviewee, MOS)

In short, EnergyWorks provides financial incentives for energy efficiency upgrades to who already have the ability to act, and is marketed towards homeowners who can afford them. Its primary lever is a loan with an interest rate of 0.99% provided by the bank AFCFirst to finance home energy efficiency improvements up to a maximum of $15,000 per home. In addition, the ECA offers a subsidized Home Energy Assessments by BPI-certified Building Analysts for only $150. To access the home improvements made possible by EnergyWorks, then, the resident must be able to pass credit scoring tests, own their home, and be able to service a loan (albeit one with very low interest). In short, they must have access to capital in order to lay claim to the improvements the state is making available for housing in the name of climate change, in ways that are clearly in accordance with the kinds of circulations which Harvey (2008) suggests are creating new forms of exclusion in the city.

Of course, this model of urban reconstruction promoted by the Coolest Block Contest and operationalized in EnergyWorks clearly positions private capital as a valid beneficiary of climate change action. "Well we certainly don't want to make products that nobody wants to buy", explained the representative from Dow, "… we make materials that can lower our greenhouse gas footprint. And that's good for business yes I mean I'm not going to deny that but I also think that if that was the only thing that wouldn't necessarily be enough" (Interviewee, Dow). Dow's approach to the contest epitomized the utopia of the new green deal where 'good for business' is aligned with 'good for the environment' with the effect that housing is incorporated yet again (and for a different reason) into the circulations of capital. Dow might sell more products as a result, but banks also generate profit through the loans financing EnergyWorks, and the residents who have access to capital can improve their homes and their wealth by accessing these products.

[2] In addition to an estimated $260 million funding flowing into Pennsylvania's Department of Community and Economic Development from the US Department of Energy's $5 billion 'Weatherization Assistance Program', ARRA funding (a) increased the level of weatherization assistance from $2500 to a maximum of $6500 per household, and broadened the eligibility criteria from those households earning less than 150% of the income threshold of the poverty line to those earning less than 200%; (b) provided an Energy-Efficiency and Conservation Block Grant which in 2009 was expected to bring $14M directly to the City to support energy-efficiency activities; (c) funded a $500M competitive funding opportunity offered by the Department of Labor to support green jobs training; and (d) provided $2 billion funding for the Energy and Green Retrofit program for assisted housing (City of Philadelphia, 2009, p. 22).

The 'working poor'

The organizers of the Coolest Block contest were certainly aware of the fact that poverty is one of the key challenges to both improving the quality of housing and improving Philadelphia's ability to adapt to a changing climate whilst also reducing its contribution to greenhouse gas emissions. As explained earlier in this paper, Philadelphia's housing reflects in material form the uneven development of the city, and particularly the patterns of urban poverty which developed as the City boomed as an industrial powerhouse and then contracted with the decline of industry. This creates a particular dynamic of poverty in the city, where "We have this high level of homeownership, high poverty rate and then old housing stock so we have this home repair crisis you know folks are living in houses that they can't afford to maintain but also are struggling to pay utility bills on" (Interviewee 2, Habitat for Humanity Philadelphia). This group of 'working poor' make up somewhere in the order of 40% of the City's population (Interviewee, ECA) and they present the greatest challenge for urban regeneration, low-carbon or otherwise. They are excluded from the welfare state mechanisms available to the poorest by virtue of their assets and their incomes. But at the same time, "they don't have a good credit score, they don't qualify for loans and they don't have a lot of assets. So they don't participate in EnergyWorks" (Interviewee, ECA). Nor were they really able to benefit from the Coolest Block Contest, given the criterion discussed above that the roofs needed to be in good condition, because the houses of the working poor are literally crumbling around them:

> you've got a whole section of the city with very poor roofs and we find in weatherising these homes that fully 40% of them have roofs that are actively leaking at the time we go to weatherize them which means that in many cases if the roof has been leaking for a long time and is in very poor condition it really has to be replaced, we can't repair it in the budget that we have with these programmes (Interviewee, ECA)

The new opportunities which climate change has opened up for improving housing are thus closed to them too, and their assets (in the form of their homes) are actually liabilities. They are stuck in the zone which the state has vacated and capital is unwilling to colonise, without freedom because they do not have access to sufficient capital. "We do have one tiny little programme in West Philly that provides a grant to people who live in a specific neighbourhood that have been rejected for the loan, you know they've applied but they don't qualify for the loan" explained the representative of the ECA, "but programmes like that that are grant based are really tough to come by, they are few and far between now" (Interviewee, ECA). Such residents are not dissimilar from those involved in Philadelphia's recovery house movement, who have come to depend on what Fairbanks (2011, p. 2256) describes as a "shadow welfare state" serving "populations locked outside the zones of downtown remodelling and pushed to the outer periphery of formal public–private partnerships" which have arisen in response to the "new politics of self-help and informal poverty management". Perhaps a solution lies in the model of Habitat for Humanity, which in Philadelphia was trying to develop a basic weatherization package that would cost a total of $2500 along with

the investment of so-called 'sweat equity' by its beneficiaries. However, even that encounters the difficulty of people having to admit that they are unable to manage independently.

Conclusions: reconfiguring housing in the name of climate change

Climate change has become a means through which questions of energy and economy have been framed and mobilized at the urban level. In Philadelphia, climate change has become a means through which the interests of state and capital have come to be aligned in such a manner as to open up long-standing questions of how to renovate the city's housing on the one hand, and of how to create new forms of low carbon economy on the other. Such forms of politics and intervention, we argue, lend themselves to analysis of the ways in which urban political ecologies are being reconfigured in response to climate change and through housing. This in turn demands that analysis moves beyond the large infrastructure systems that have characterized much of UPE (Braun, 2005) and enters into the domestic and mundane spaces of the city on the one hand, and at the same time is able to account for how governing climate change works through distinctive forms of UPE in particular cities (While & Whitehead, 2013; Walker, 2012).

Attending to the ways in which housing is being positioned as a terrain through which to govern climate change enables us to examine the ways in which new forms of capital accumulation are taking place in the city that serve to reconfigure infrastructure but also create new forms of exclusion (Harvey, 2008). That the emerging carbon economy may lead to forms of "accumulation by decarbonisation" has predominantly been considered in terms of international flows of carbon offsets and finance (Bumpus & Liverman, 2008). The case of Philadelphia and the Coolest Block Contest suggests that we also need to attend to the ways in which decarbonisation may create uneven landscapes of accumulation and dispossession within the city. We find that the opportunity for decarbonisation, and increasing resilience, in response to climate change enabled the formation of a public-private partnership which was able to mobilize flows of resources and to engage communities in a new venture. The Coolest Block Contest therefore served as a means through which to effectively intervene in an urban context that had been found to be relatively obdurate and hard to reach. At the same time, the constitution of the Contest as a demonstration project, requiring both a certain form of engagement and a working roof, meant that only particular parts of the city could be involved, raising questions about the extent to which the emergence of a politics of climate change in the city is serving to further exacerbate existing uneven urban geographies of wealth and access to services (Bulkeley *et al.*, 2014).

More broadly, the Contest points to the challenges of ensuring that as new flows of finance start to circulate in response to the challenge of developing low carbon cities this does not serve to further widen urban inequalities. The combination of public-private finance and the articulation of self-governing citizens able to invest time, resources, knowledge and capital in their own housing has meant that programmes to 'green' Philadelphia have so far been targeted at the 'able to pay' sector of the city. While the poorest groups have access to some

level of finance in order to ensure housing meets a minimum standard, there are lengthy delays in achieving such an ambition and the challenge here remains acute. Further, the 'working poor' remain excluded from such flows of finance, raising questions about whether and how the rights of such groups not only to have protection from the costs of climate change but also to access the benefits of any low carbon transition might be realized. As Harvey has argued, addressing dispossession is not only a matter of attending to individual rights, but rather of pursuing the 'right to the city', which he views as "far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization" (Harvey, 2008, p. 23). The challenge for urban responses to climate change is how to ensure that they can facilitate such 'rights to the city' whilst also responding to the global challenges of climate change mitigation and adaptation.

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